National Institute of Environmental Health Sciences

Climate change as a threat to biodiversity: An application of the DPSIR approach

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Abstract:

Climate change and its consequences present one of the most important threats to biodiversity, and the functions of ecosystems. The stress on biodiversity is far beyond the levels imposed by the natural global climatic changes occurring in the recent evolutionary past. It includes temperature increases, shifts of climate zones. melting of snow and ice, sea level rise, droughts, floods, and other extreme weather events. Natural systems are vulnerable to such changes due to their limited adaptive capacity. Based on an analysis using the DPSIR framework, this paper discusses some of the important socio-economic driving forces of climate change, with a focus on energy use and transportation. The paper also analyses observed and potential changes of climate and the pressures they exert on biodiversity, the changes in biodiversity, the resulting impacts on ecosystem functions, and possible policy responses. The latter can be divided into mitigation and adaptation measures. Both strategies are needed, mitigation in order to stabilise the greenhouse gas concentrations in the atmosphere, and adaptation in order to adjust to changes that have already occurred or cannot be avoided. One mitigation option, increased biofuel production, which is also a response to oil depletion. would change land use patterns and increase human appropriation of net primary production of biomass, thereby threatening biodiversity. By considering the first order and second order impacts of climate change on biodiversity when developing policy measures, it will be possible to integrate ecosystem and biodiversity protection into decision-making processes.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Extreme Weather Event, Glacier/Snow Melt, Sea Level Rise, Temperature

Extreme Weather Event: Drought, Flooding, Wildfires

Temperature: Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

General Geographical Feature

Geographic Location: ☑

resource focuses on specific location

Global or Unspecified

Health Impact: ☑

specification of health effect or disease related to climate change exposure

General Health Impact

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation, Mitigation

Resource Type: ☑

format or standard characteristic of resource

Research Article, Review

Resilience: ☑

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale: ☑

time period studied

Time Scale Unspecified